Claims

1. The use of a multimodal polyethylene composition comprising as comonomers to ethylene at least two C_{4-12} alpha olefins in injection moulding.

2. Use as claimed in claim 1 wherein said at least two alpha olefins are selected from but-1-ene, hex-1-ene, 4-methyl-pent-1-ene, hept-1-ene, oct-1-ene, and dec-1-ene.

3. Use as claimed in claim 2 wherein said at least two alpha olefins are selected from but-1-ene and hex-1-ene.

4. Use as claimed in claim 3 wherein said polyethylene composition comprises an ethylene/1-butene copolymer fraction and either an an ethylene/1-hexene copolymer fraction or an ethylene/1-butene/1-hexene terpolymer fraction.

5. An injection moulded article produced from a multimodal polyethylene composition comprising as comonomers to ethylene at least two C_{4-12} alpha olefins.

6. An article as claimed in claim 5 comprising a bimodal polyethylene composition comprising

a) a lower molecular weight homopolymer of ethylene and

b) a higher molecular weight terpolymer of ethylene, 1-butene and a C_5 to C_{12} alpha-olefin.

7. An article as claimed in claim 5 comprising a bimodal polyethylene composition comprising

a) a lower molecular weight polymer which is a binary copolymer of ethylene and 1-butene or 1-hexene and

b) a higher molecular weight polymer different from a) which is either a binary copolymer of ethylene and 1-hexene, or a terpolymer of ethylene, 1-butene and a C_6 to C_{12} alpha-olefin.

8. An article as claimed in claim 5 comprising a bimodal polyethylene composition comprising

a) a lower molecular weight polymer which is a terpolymer of ethylene, 1-butene and 1-hexene, and

b) a higher molecular weight polymer which is a terpolymer of ethylene, 1-butene and 1-hexene.

9. An article as claimed in any one of claims 5 to 8 wherein the ratio of components a) to b) is 60:40 to 40:60% wt.

10. An article as claimed in any one of claims 5 to 9 wherein the bimodal polyethylene composition has a MWD of 2 to 8.

11. An article as claimed in any one of claims 5 to 10 wherein the bimodal polyethylene composition has a density of 905 to 930 kg/m^3.

12. An article as claimed in any one of claims 5 to 11 wherein the bimodal polyethylene composition has an impact strength (ISO179 at 23°C) of at least 40 kJ/m^2.

13. An article as claimed in any one of claims 5 to 12 wherein the bimodal polyethylene composition has a tensile modulus (ISO527-2) of 60 to 400 MPa.

14. An article as claimed in any one of claims 5 to 13 wherein the bimodal polyethylene composition has a hexane extractable fraction (ASTM D5227) of less than 3 wt%.

15. An article as claimed in any one of claims 5 to 14 wherein the bimodal polyethylene composition has a level of migration measured by immersion in olive oil of less than 10 mg/dm^2.

16. An article as claimed in any one of claims 5 to 15 being medical or food packaging or a closure means.

17. A process for the preparation of an injection moulded article as claimed in any one of claims 5 to 16 comprising:

(I) polymerising ethylene and optionally at least one C_{4-12} alpha olefin in a loop reactor in the presence of a metallocene catalyst:

(II) transferring the resulting polymer with the metallocene catalyst to a gas phase reactor and polymerising ethylene and at least one C_{4-12} alpha olefin so as to form a multimodal polyethylene composition comprising as comonomers to ethylene at least two C_{4-12} alpha olefins; and

(III) injection moulding said composition.